

IDEX

call for projects

Université

Côte d'Azur

Amended Project

UNIVERSITÉ
CÔTE D'AZUR 

EXECUTIVE SUMMARY

UCA^{JEDI} : Joint, Excellent and Dynamic Initiative

The IDEX UCA^{JEDI} candidature is coordinated by the Université Côte d'Azur (UCA), a Community of Universities and Establishments (ComUE), comprising:

- The Université Nice Sophia Antipolis (UNS), research-intensive, present in all international rankings;
- Two National Research bodies: CNRS and Inria, multidisciplinary and emblematic in digital sciences, respectively;
- The Observatoire de la Côte d'Azur (OCA), one of the three French SPU establishments, with a strong commitment to international projects;
- The Centre Hospitalier Universitaire (CHU) of Nice, a leading national center for simulation and innovation in hematology, biological resources and therapies;
- EDHEC and SKEMA, two Business Schools present in all international rankings;
- A consortium, into a college, of six Art Schools, active on the international scene:
Centre National de Création Musicale, Ecole Nationale Supérieure d'Art Villa Arson, Ecole Supérieure de Réalisation Audiovisuelle (ESRA), The Sustainable Design School (SDS), Ecole Supérieure de Danse de Cannes Rosella Hightower, Conservatoire National à Rayonnement Régional de Nice (CNRR)

In addition to the 13 members of the UCA, the candidature also includes as partners, by agreement, INSERM, INRA, IRD, the MINES ParisTech (for its site at Sophia Antipolis) and EURECOM. The scope of UCA^{JEDI} thus brings together all the public and private entities of higher learning and research, well-known and visible on the international scene, that are present on the Côte d'Azur.

The UCA^{JEDI} strategy rests on three pillars: (i) an ambitious and disruptive scientific vision; (ii) an uninhibited relationship with local authorities and companies, dedicated to the economic dynamics of the territory; (iii) a simple, efficient governance, able to make quick decisions.

This strategy aims to give rise to a world class research-intensive University.

In a world undergoing profound and rapid change, the challenge of evolving knowledge and its impact is at the heart of the ambition of UCA^{JEDI}. The history of modern science has shown that seminal questions are generated by the cross-fertilization of interdisciplinary knowledge. Scientific innovation, as well as technological and organizational rupture, are the result of the combined action of several approaches to a given subject. The UCA^{JEDI} thus promotes a deliberately transdisciplinary approach, driven by the excellence of the fundamental research carried out on site. Through this approach, our project is aimed at entirely renewing the dynamics of the relationship between research, training and innovation. Thanks to its transformative effect, by creating a common identity, beneficial for all, resulting in a unified communication approach and unique signature, this initiative of excellence will turn the UCA into a high profile research university present on the world stage, typified by its development model and its transdisciplinary research.

Prior to any sort of consortium, the UNS is the premier French university and is ranked 38th in the world in Life Sciences, in the Leiden CWTS ranking (top 10% citation indicator). The quality of our research is also attested to in Sciences of the Planet and the Universe, in partnership with the OCA (2nd French University – 34th in the world); in Health Sciences, in partnership with the CHU (3rd French university – 47th in the world); in Mathematics (150th in the Shanghai ranking); and in Digital Sciences (premier European technopark). These results place us among the top 500 universities in the Shanghai general ranking (around 400). The involvement in the project of the five largest French research organizations: CNRS (premier research body in the world), Inria, INSERM, INRA, and IRD, all bear witness to the scientific potential of this candidature, and provide a guarantee of excellence in the consortium. The presence of two Business Schools, present in world rankings, brings to the project, in addition to their research and training activities, a culture of quality assurance. The participation of the Art Schools College, comprising world-class establishments, is a guarantee of the originality of our vision, and will boost the creativity of our approach. In all, each of the players brings a unique contribution with high added value and a new dimension. The concentration of major players and the intrinsic attractiveness of the territory have made it possible to attract and to retain internationally renowned research personalities (2 gold medals, 20 silver medals and 41 bronze medals from the CNRS; 12 members of the Academy of Sciences; 19 ERC's; 19 members of the IUF in 2015; ranking second after Paris in the Academy of Sciences Prizes in 2013 and 2014) and a large number of well-known figures from the artistic world.

UCA^{JEDI} will be organized around five Academies of Excellence (PERIDEX : 46% of permanent researchers in A+/A laboratories) – initiating a trans-disciplinary approach – and three Reference Centers, hosting very high level technological platforms, in public-private partnership. At the heart of this set up, modeling, simulation and Interactions will be the common denominator among advanced research projects, and will be implanted on a dedicated site: the Center of Modeling, Simulation and Interactions (MSI). Based on a model of a Graduate School, UCA^{JEDI} will comprise an initial (particularly at the Master's and Doctoral levels) and ongoing training offer, linked to fundamental and applied research, steered by the Academies, launched in the Centers and at the MSI.

By means of calls for projects, the leading researchers in the UCA will have access to UCA^{JEDI} funding for purposes of developing research and training programs.

After an across-the-board consultation (a bottom-up process from the A+ and A laboratories), the scientific domains within the 5 Academies of Excellence that were selected are:

- Networks, information and digital society;
- Complex systems;
- Space, environment, risk and resilience;
- Complexity and diversity of living systems;
- Human societies, ideas and environments.

Through the study of these topics, and thanks to a core of disciplinary excellence, these academies will generate the trans-disciplinary approach that is still lacking in French universities.

UCA^{JEDI} will also provide an effective connection and interactivity between fundamental research and innovation, by means of its three Reference Centers, set up in order to respond to three major societal challenges, targeted in a top-down approach, in close relationship with the territory and its local authorities:

- Health, well-being and aging;
- The intelligent territory; prevention and management of risk;
- The digital challenge.

The Reference Centers will be given collaborative technological platforms where researchers, students and companies can interact in order to invent the future.

Resolutely turned towards international openness, making use of the best skills and teaching approaches of its partners, UCA^{JEDI} will have as its goal the launching of training courses of excellence within the Graduate School. Using a selective, à la carte approach, with majors and minors, the goal will be to nourish academic research and territorial development. The offer will be rounded out by Summer Schools and internationally renowned Master Classes (International Grand Prizewinners, Academicians, ERC's etc). A Virtual Center of Pedagogical Innovation (VCPI) will bring together skills, instruments and available databases, accessible via a dedicated platform, to enrich training for students and/or working professionals, and in order to accompany innovative entrepreneurs.

In order to place UCA among the top 50 European universities from a commercialization standpoint, our ambition is to become a major start-up player, by investing more specifically in the acceleration of early-stage companies through the development of fundraising.

The territory's technological structuring will be driven by the development of a world-class innovation campus focused around the UCA^{JEDI} Centers.

To ensure an international reach for all of its encompassed areas, UCA^{JEDI} will set up international networks structured in three dimensions: international excellence, French speaking world, and emerging countries.

Our human resources policy is based on an incentives-based system, with the purpose of boosting attractiveness, developing public-private co-funding, and rewarding personal commitment. The launch of new professorships and the implementation of career accelerators will provide stability for the best recruits. UCA^{JEDI} Prizes awarded by the Strategic Committees will encourage the development of the transdisciplinary approach.

Made up of 30 members, the Executive Board of the UCA has elected its President, who will also preside over UCA^{JEDI}. UCA^{JEDI} governance will be carried out by its President and his or her Cabinet composed of four Program Directors. The UCA^{JEDI} President and his or her Cabinet will be advised by two independent international Committees: the Scientific Strategic Committee and the Industrial Territorial Strategic Committee, which will contribute to the guidance of the IDEX. "Premium" services, under the authority of the Program Directors, will have as their sole brief the accompaniment of UCA^{JEDI} -selected projects. Comprising dedicated personnel provided by UCA members, they will be structured in "Project mode" to avoid compartmentalization into core competences. **The President, his or her cabinet, and the committees will ensure that exclusive use is made of Initiative funds and partner contributions for UCA^{JEDI} actions.** The Executive Board of UCA exercises a posteriori control, to encourage initiative and reactivity and ensure the transforming effect of the Initiative.

In ten years, the scientific activity carried out thanks to UCA^{JEDI} will have led to the emergence of an transdisciplinary University and of Academies with a worldwide reputation, capable of attracting young talent, as well as of world-class reference centers responding through technological innovation and usage to the major challenges facing society, as set out in the UCA^{JEDI} roadmap. The dynamic initiated by UCA^{JEDI} and the innovative character of its distinctive collaborative practices will create self-organizing conditions for excellence; it will drive the emergence of future science, training and innovation.

**UCA IS THE BEARER OF OUR AMBITIONS FOR THE UNIVERSITY OF TOMORROW;
UCA^{JEDI} WILL ENABLE US TO GIVE SHAPE TO THOSE AMBITIONS.**

RÉSUMÉ OPÉRATIONNEL

UCA^{JEDI} : «Unis dans la Dynamique de l'Excellence»

La candidature IDEX UCA^{JEDI} est portée par Université Côte d'Azur (UCA), Communauté d'Universités et d'Établissements (ComUE) composée de

- l'Université Nice Sophia Antipolis (UNS), intensive en recherche, présente dans tous les classements internationaux,
- Deux organismes de Recherche Nationaux, le CNRS, pluridisciplinaire, et l'Inria, emblématique en sciences du numérique,
- L'Observatoire de la Côte d'Azur (OCA), l'un des 3 établissements français en SPU, fortement impliqué dans les très grands équipements internationaux,
- Le Centre Hospitalier Universitaire (CHU) de Nice, centre pilote national de simulation et d'innovation en hématologie, ressources biologiques et thérapies,
- EDHEC et SKEMA, deux Ecoles de Commerce présentes dans tous les classements internationaux,
- Un regroupement en Collège de 6 Ecoles d'Art à rayonnement international : le Centre National de Création Musicale, l'École nationale supérieure d'Art, Villa Arson, l'École Supérieure de Réalisation Audiovisuelle, The Sustainable Design School, l'École supérieure de Danse de Cannes, Rosella Hightower, le Conservatoire National à Rayonnement Régional de Nice.

Outre les 13 membres d'UCA, cette candidature a aussi comme partenaires de l'initiative, par le biais de conventions, l'INSERM, l'INRA, l'IRD, l'École MINES ParisTech pour son site de Sophia Antipolis et EURECOM. Le périmètre UCA^{JEDI} fédère donc toutes les entités publiques et privées d'enseignement supérieur et de recherche à forte notoriété et visibilité internationale présentes sur le territoire de la Côte d'Azur.

La stratégie d'UCA^{JEDI} se fonde sur 3 piliers : (i) une vision scientifique ambitieuse et disruptive; (ii) une relation désinhibée avec les collectivités et les entreprises, dédiée à la dynamique économique du territoire ; (iii) une gouvernance simple, efficace et apte à décider rapidement.

Cette stratégie vise à construire une Université intensive en recherche à forte visibilité mondiale.

Dans un monde soumis à de profondes et rapides mutations, l'enjeu de la progression des connaissances et de leur impact (formation, entreprises, société) est au cœur de l'ambition d'UCA^{JEDI}. L'histoire des sciences modernes nous apprend que les questions séminales viennent désormais de la fertilisation croisée des connaissances disciplinaires. Les innovations scientifiques, les ruptures technologiques et organisationnelles sont le fruit des regards croisés de plusieurs approches sur un même objet. Le projet UCA^{JEDI} promeut donc une transdisciplinarité assumée, nourrie par l'excellence de la recherche fondamentale du site. Par son approche, notre projet entend renouveler entièrement la dynamique des relations entre recherche, formation et innovation. Par son effet transformant, en créant une identité commune, bénéfique pour tous, traduite par une communication unifiée et une signature unique, cette initiative d'excellence fera d'UCA une université de recherche parmi les meilleures mondiales, typée par le modèle de développement de sa recherche transdisciplinaire.

Avant toute forme de regroupement, l'UNS est première université française et la 38ème mondiale en Sciences de la Vie au classement CWTS de Leiden (indicateur 10% des articles les plus cités). La notoriété de notre recherche est aussi attestée en Sciences de la Planète et de l'Univers, en partenariat avec l'OCA, (2ème université française - 34ème mondiale, CWTS), en Sciences de la Santé, en partenariat avec le CHU (3ème université française - 47ème mondiale, CWTS), en Mathématiques (150ème au classement de Shanghai) et en Sciences du numérique (présence d'Inria, Sophia Antipolis première technopole européenne). Ces résultats nous permettent, en dépit de la taille modeste de notre site, d'apparaître dans les 500 universités présentes au classement général de Shanghai (autour de 400). L'implication dans le projet des cinq plus grands organismes de recherche français, CNRS (premier organisme mondial de recherche), Inria, INSERM, INRA et IRD témoigne du potentiel scientifique de cette candidature et garantit une trajectoire d'excellence au groupement. La présence de deux Ecoles de Commerce, présentes dans les classements européens, apporte au projet, au delà de leurs activités de recherche et de formation, la culture de l'assurance qualité. Le regard du Collège des Ecoles d'Art, qui comporte des établissements de référence mondiale, garantit l'originalité de notre vision et questionne la créativité de notre démarche. Au total, chacun des acteurs apporte au projet une contribution unique à forte valeur ajoutée et une dimension nouvelle. La concentration d'acteurs majeurs et l'attractivité intrinsèque du territoire permettent d'attirer et de conserver des chercheurs de renommée internationale (2 médailles d'or, 20 médailles d'argent et 41 médailles de bronze du CNRS ; 12 membres de l'Académie des Sciences, ; 19 ERC ; 19 membres de l'IUF en 2015 ; deuxième rang après Paris dans le palmarès de l'Académie des sciences en 2013 et 2014, troisième rang après Paris dans le rapport nombre d'ERC/nombre de chercheurs) et des personnalités du monde artistique.

UCA^{JEDI} s'organisera autour de cinq Académies d'Excellence portant la transdisciplinarité et de trois Centres de Référence abritant des plateformes technologiques de très haut niveau en partenariat public-privé. Au cœur de ce dispositif la modélisation, la simulation et les interactions seront le dénominateur commun des recherches développées et s'organiseront dans un lieu dédié : la Maison de la Modélisation, de la Simulation et des Interactions (MSI). Sur un modèle de Graduate School, UCA^{JEDI} portera une offre de formation initiale et continue, en lien avec les recherches fondamentales et appliquées, pilotée par les Académies et déployée sur les Centres et la MSI.

Les meilleurs chercheurs du groupement auront accès, au travers d'appels à projet, aux financements UCA^{JEDI} pour développer les programmes de recherche et de formation.

Au terme d'une large concertation (processus bottom-up issu des laboratoires A+ et A), les périmètres scientifiques retenus au sein des 5 Académies d'Excellence sont :

- Réseaux, information et société numérique ;
- Systèmes complexes ;
- Espace, environnement, risque et résilience ;
- Complexité et diversité du vivant ;
- Homme, idées et milieux.

Au travers de ces thématiques, et en s'appuyant sur un cœur d'excellence disciplinaire, ces académies généreront la transdisciplinarité encore trop absente des universités françaises.

UCA^{JEDI} assurera également la connexion effective et les interactions entre recherche fondamentale et innovation au travers de ses trois Centres de Référence, construits pour répondre à trois grands enjeux sociétaux ciblés de manière prioritaire dans une démarche top-down, en lien avec le territoire et ses collectivités :

- La santé, le bien-être et le vieillissement.
- Le territoire intelligent, la prévention et la gestion des risques.
- Le défi du numérique.

Les Centres de référence seront dotés de plateformes technologiques collaboratives où chercheurs, étudiants et entreprises pourront interagir.

Résolument ouverte sur l'international, utilisant le meilleur des compétences et des pédagogies des partenaires, UCA^{JEDI} aura pour objectif de déployer au sein de la Graduate School des formations d'excellences. Sélectives, à la carte, avec majeures et mineures, elles auront pour vocation d'alimenter la recherche académique et le développement du territoire. Cette offre sera complétée par des Ecoles d'Été et des Master Class de renommées internationales (invitations de lauréats de Grands Prix Internationaux, d'Académiciens, ERC, etc.). Un Centre Virtuel d'Innovation Pédagogique regroupera les compétences, les instruments et les bases de données disponibles, accessibles sur une plateforme dédiée, pour enrichir la formation des étudiants et/ou des salariés et pour accompagner les entrepreneurs innovants.

Pour placer UCA dans le classement des 50 meilleures Universités Européennes en matière de valorisation, nous ambitionnons de devenir un acteur majeur de la création de start-up, en investissant plus spécifiquement dans l'accélération des « pépites » par le développement de la levée de fonds.

La structuration technologique du territoire sera portée par le développement de campus d'innovation de référence mondiale autour des Centres UCA^{JEDI}.

Pour assurer son rayonnement dans l'ensemble de ses champs de compétence, UCA^{JEDI} constituera des réseaux internationaux structurés selon trois dimensions : excellence internationale, francophonie, pays émergents.

Notre politique de ressources humaines est fondée sur la mise en place d'un système d'incitation qui a pour objectifs de soutenir l'attractivité, développer les co-financements public-privé, récompenser l'engagement des personnels. Le déploiement de chaires le recrutement au sein de la fonction publique et la mise en place d'accélérateurs de carrière permettront de stabiliser les meilleures recrues. Des Prix UCA^{JEDI} attribués par les comités Stratégiques encourageront le développement de la transdisciplinarité, l'investissement des personnels et des étudiants.

Composé de 30 membres, 12 nommés par les établissements membres fondateurs, 10 élus au suffrage indirect, 2 représentants des EPST partenaires et 6 représentants des entreprises et collectivités, le Conseil d'administration d'UCA a élu son Président qui préside aussi UCA^{JEDI}. La gouvernance d'UCA^{JEDI} sera assurée par le Président de l'Idex et son Cabinet composé de 4 Directeurs de programmes. Le Président d'UCA^{JEDI} et son Cabinet est conseillé par deux Comités internationaux indépendants : le Comité Stratégique Scientifique, le Comité Stratégique Industriel et Territorial qui assurent la trajectoire de l'IDEX. Des services « Premium », placés sous l'autorité des Directeurs de Programme, auront pour unique mission d'accompagner les porteurs de projets sélectionnés UCA^{JEDI}. Composés de personnels dédiés fournis par les membres d'UCA, ils sont constitués en mode projet pour éviter le cloisonnement en compétences métier.

Le Président, son bureau et les comités assurent une utilisation exclusive des fonds IDEX et des contributions des partenaires pour les actions UCA^{JEDI}. Le Conseil d'Administration d'UCA exerce un contrôle à posteriori, favorisant l'initiative et la réactivité et assurant l'effet transformant de l'initiative.

Dans dix ans, l'activité scientifique menée grâce à UCA^{JEDI} aura fait émerger une université transdisciplinaire, des Académies de réputation mondiale, attirant les jeunes talents, et des grands centres de référence mondiale répondant par l'innovation technologique et d'usage aux enjeux majeurs de société de la feuille de route d'UCA^{JEDI}. La dynamique impulsée par UCA^{JEDI} et le caractère innovant de ses pratiques collaboratives distinctives créeront les conditions de l'auto-organisation de l'excellence et porteront l'émergence de la science, de la formation et de l'innovation à 20 ans.

**UCA PORTE NOTRE AMBITION POUR L'UNIVERSITÉ DE DEMAIN,
UCA^{JEDI} NOUS PERMETTRA DE LA CONCRÉTISER.**

1. ATTRIBUTES OF THE CONSORTIUM

1.1. PRESENTATION OF THE PROJECT LEADER AND PARTNERS

The UCA^{JEDI} "Joint, Excellent and Dynamic Initiative" IDEX candidature is an ambitious project aiming to create a **new French university model**. Building on the existing excellence of the universities, schools, and research establishments of the Côte d'Azur region, the agility afforded by our relatively small size, and the unified and enthusiastic support of the local public authorities and private industry, we believe we are uniquely positioned to **break down** existing institutional and disciplinary **barriers** and implement a new, shared vision of an innovative, agile, transdisciplinary University. Our entire community is determined to take advantage of the unique opportunity provided by the IDEX funding to transform our university and region, creating a modern, research-intensive university ranking among the top 100 in the world.

The UCA^{JEDI} is coordinated by the University of the Côte d'Azur (UCA), a Community of Universities and Establishments (ComUE). The UCA is acting on behalf of all of its members:

- The Université Nice Sophia Antipolis (UNS),
- two National Research bodies, CNRS and Inria,
- the Observatoire de la Côte d'Azur (OCA),
- the Centre Hospitalier Universitaire (CHU) of Nice,
- two Business Schools, EDHEC and SKEMA,
- and a college, of six Art Schools:
 - Centre National de Création Musicale, Ecole Nationale Supérieure d'Art Villa Arson, Ecole Supérieure de Réalisation Audiovisuelle (ESRA), The Sustainable Design School (SDS), Ecole Supérieure de Danse de Cannes Rosella Hightower, Conservatoire National à Rayonnement Régional de Nice (CNRR).

Three additional research agencies and two Engineering schools are also stakeholders in the initiative and will be present in the official ANR agreement, as shown in Table A.

Tab. A - List of consortium members who are stakeholders in the Initiative

Higher education and research establishments	Research organisations	Others
Ecole Nationale Supérieure des Mines de Paris	Institut de Recherche pour le Développement	Eurecom Sophia Antipolis
	Institut National de la Recherche Agronomique	
	Institut National de la Santé et de la Recherche Médicale	

Université Nice Sophia Antipolis (UNS)

First French University in life sciences (38th in the world), second in planetary and universe sciences (34th in the world), third for medical sciences (47th in the world) in the CWTS Leiden ranking, top 10% citation indicator.

UNS is present in the Shanghai ranking ever since it was created, in the top 500 universities in the world, and in the top 150 best universities in mathematical science domains in 2014

UNIVERSITÉ
CÔTE D'AZUR 

Centre Hospitalier Universitaire de Nice (CHU Nice)

The CHU of Nice is a Public Health institution. It endorses the specific values that are the strength of the French health care system: access to health care for everybody, and in any circumstances, is regardless of origin or social class distinction. Reference Establishment and regional recourse, are providing a threefold mission of health care, academic teaching and research & innovation.

EDHEC business school

EDHEC business school ranks among the top schools in France.

3rd master in finance worldwide and 16th master in management worldwide, according to the financial Times 2014 ranking

The Villa Arson

The Villa Arson dedicated to contemporary art creation gathers a national school of fine Arts, a Centre for Contemporary Art, a media library and a artists residency. The national school of fine Arts of the villa Arson is one of the 7 national schools under the aegis of the ministry of Culture

SKEMA business school

SKEMA business school ranks among the top schools in France. 10th master in finance worldwide and 28th master in management worldwide, according to the financial Times 2014 ranking

Ecole Supérieure de Réalisation Audiovisuelle (ESRA)

Created in Nice in 1988, the Ecole Supérieure de Réalisation Audiovisuelle is a part of the Group ESRA whose schools are also implanted in Paris, Rennes and Brussels. It dispenses artistic and technical trainings in the main jobs by the cinema and by the television (ESRA), by the sound (ISTS) and by the 3D animation (Sup' Infograph). Member of the CILECT which includes the most important schools of cinema and television in the world, It also maintains narrow links with the occupational environment.

Conservatoire National à Rayonnement Régional de Nice (CNRR)

The conservatory of Nice has always enjoyed great prestige in France and abroad. During its one hundred years of history, it has trained a large number of dancers, actors and musicians today know throughout the world. Since 2006, the Conservatory has moved in a new modern building, it carries out its pedagogic mission in the city of Nice and region PACA. The Conservatory provides teaching of music, dance, and the dramatic arts, from beginning to higher, pre-professional levels.

Ecole Supérieure de Danse de Cannes Rosella Hightower

Since its creation in 1961 the Ecole Supérieure de Danse de Cannes Rosella Hightower has become one of the world's premier professional dance schools by inviting dancers and choreographers coming for training and delivering training courses such as Anton Dolin, serge lifar, rudolf noureev, maurice béjart, gilles Jobin

Observatoire de la Côte d'Azur (OCA)

The Observatoire de la Côte d'Azur is a research institution for the development of theoretical, instrumental and observational science of the Universe and the planet Earth. OCA is a leading actor of space missions and ground-based observatories. Large laser-ranging surveys, as well as space security campaigns on debris and NEO's detection and tracking programs make OCA a major partner of space agencies and industries.

Centre national de la recherche scientifique (CNRS)

CNRS was the first research organization to establish a laboratory on the Sophia Antipolis techno park and since then has affirmed its research excellence on the Côte d'Azur.

Institut national de la recherche en informatique et en automatique (Inria)

Inria has been established in Sophia Antipolis for over 30 years. Inria Research Center Sophia Antipolis Méditerranée's contributions to the Inria Strategic Plan 2013-2017 are focused on the following priorities : Computational sciences for personal assistance and home care ; Computational and experimental neurosciences ; Modeling and simulation for energy production and management ; Processing massive and heterogeneous data.

The Sustainable Design School (SDS)

The Sustainable Design School is an international school for innovation and sustainable design. Its academic programmes are transversal, international and pluridisciplinary. Some courses integrate projects enabling creative students to meet up with companies in order to imagine and create the products and services of the future.

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Centre National de Création Musicale (CIRM)

The CIRM is one of six French National Centers for Musical Creation, label awarded by the Ministry of Culture in 1997. Its activities are centered on four areas : production, distribution, research and training. They bring together professionals: composers, computer music directors, researchers, sound engineers, musicologists, students in electroacoustic composition, working, among others, on new technologies for musical creation. Founded in

While the project has been developed with the participation of all of the socioeconomic partners of the region, only the primary external partners are shown in Table B.

Tab. B - List of partners external to the consortium leading the Initiative

Research organisations	Socio-economic players	Others
	Amadeus	Communauté d'agglomération des Pays de Lérins
	BASF	Communauté d'agglomération du Pays de Grasse
	DALKIA	Communauté d'agglomération Sophia Antipolis
	GrDF	Conseil Départemental des Alpes Maritimes
	Gridbee	Conseil Régional Provence Alpes Côte d'Azur
	IBM	Métropole Nice Côte d'Azur
	Orange	Team Côte d'azur
	Thales Alenia Space	
	Qwant	
	We have 200 companies that have signed a written commitment for up to 43 million euros for cofunding IDEX activities (see Appendix 2 and financial Table #3).	

The UCA^{JEDI} consortium is characterized by:

- **Its uniqueness.** Made up of players who complement one another from an institutional and topical standpoint (universities, research centers, art schools, management schools), UCA covers a wide spectrum of disciplines, encouraging innovative research and training activities. Because it lies within a concentrated geographical perimeter, it is active in a well identified ecosystem. Finally, UCA only includes a single university partner, which will allow it an exceptional degree of flexibility;
- **Its Experience** born of close and fruitful collaboration. The consortium's members have demonstrated their ability to initiate many joint projects, most notably in the course of preparing the 2015-2020 Region-State Contract (CPER), in which they were able to define, and vigorously defend, shared investment priorities concerning major scientific endowments and equipment;
- **Its excellence** and visibility, translating into the attractiveness of its training offer, international recognition of its scientific research (in spite of its small size, UCA is present in all the international rankings) and links with socio-economic players.

The UCA's strategy rests on **3 pillars**:

- A joint **cohesive scientific policy** between players that promotes a voluntarily transdisciplinary approach, using the wealth of its skills and long-standing experience in interdisciplinary collaboration;
- A **clear** and balanced **site policy** for the territory, in reinforced partnership with local authorities and companies;
- A **Governance** respectful of all, but nevertheless capable of making **quick decisions**.

This strategy has the support of the entire scientific community, and in our view is the most promising way to meet the scientific, technological, societal and territorial challenges of the decade. In order to lend support to these strategic ambitions, the consortium's partners have committed to certain core values.

2. AMBITION OF THE INITIATIVE

UCA^{JEDI} is designed to be a **catalyst** that will transform the UCA and its territory. As the facilitator of a different mode of thought of training, of entrepreneurship, of research and development, UCA^{JEDI} offers a **fundamental rethinking** of the relationships that exist between partners.

A rapid assessment of the French university system shows that, in spite of its diversity and richness, it is not ready for the current context of discontinuity. Rather, it is set up along rigid lines; and this in a world where it is becoming crucial to be flexible and reactive, to **encourage risk-taking** and the creation of environments in which talent can bloom. The question is indeed one of excellence; however, the excellence needs to possess agility in its processes.

Keeping in mind the two goals of excellence and agility in all of its actions, the challenge facing UCA^{JEDI} is to develop and reinforce the site's advantages, to overcome identified weaknesses, and to structure the consortium and increase its visibility around the world.

More exactly, our ambition is to:

- Move the UCA squarely up into world-class research and innovation rankings, with a high-profile international attractiveness;
- Confer upon UCA the role of an **international leader in transdisciplinary research**, by encouraging an adapted scientific and intellectual posture, and by de-compartmentalizing the various topical components through joint projects;
- Attract to UCA, students and researchers with strong creative potential through an ambitious range of training and research programs that include **state-of-the-art information and communication technologies** and by drawing artistic creation and scientific creation closer together;
- Anchor UCA in its territory by **multiplying interactions** between academic research and private development research;
- Make UCA an essential partner in areas with strong socio-economic potential, especially the use of digital domains in the sectors of health, well-being, aging, environment-related hazards, and the smart city and territory including Human and Social Sciences.

To support this **new university model**, it is necessary to create an organization that favors new interactions between the disciplines and between fundamental and applied research. The coordination required to initiate the UCA^{JEDI} project must take the form of entities that will progressively **develop and organize** new types of **interactions** between all the directly involved players. In terms of the academic coordination that will be required to realize this vision, it will be necessary to focus on three aspects in particular: scientific organization, interactions between fundamental research and innovation, and governance. These elements are set out below and detailed in the rest of the dossier.

A central part of our vision is the creation of new structures that will facilitate the necessary interactions between the existing academic, industrial, and public actors of the region. In particular, we will create five **Academies of Excellence** bringing together the diverse research strengths of the region, three **Reference Centers** that will create an interface between the academic world and the private sector and local authorities in areas of critical public interest, and a **Center of Modeling, Simulation, and Interactions**, which will promote the use of the modern analytical tools that will be necessary to face the scientific and societal challenges of tomorrow. Finally, we will create a **Virtual Center for Pedagogical Innovation** to facilitate the development and spread of modern, innovative teaching approaches and resources.

To calibrate our goals, we have carried out a benchmarking process with respect to the best universities in the world. Through the use of U-multirank, which facilitates the identification of and comparison to similar

universities, and the use of the Shanghai and Leiden rankings, which rank excellent universities, we identified one target university: the University of California, Irvine (UCI). UCI is ranked 47th in both the Shanghai and Leiden rankings, and has the distinctive characteristics of being: (i) very selective while still remaining a leader in the promotion of social mobility, (ii) very attractive, (iii) funded by external resources, (iv) decentralized with respect to its research activities, and (v) oriented towards an active campus life. UCI thus constitutes a global benchmark for UCA^{JEDI} (See Appendix 5). A recent visit to UCI has reinforced our conviction that it is a pertinent target, and we are in the process of setting up several collaborations, in both research and training, building on the organizational similarities between the UCI and the UCA (research centers organized along thematic rather than disciplinary lines, research centers focusing on graduate education, autonomy of "classical" recruitment, public-private centers, risk survey center, global engagement center...). UCI has also inspired us with respect to its Human Resources Policy and its approach to student mobility. The Chancellor of the UCI, Howard Gillman (Appendix 4), has already agreed to be a member of our Strategic Committees and to help stimulate the construction of our new university.

→ **University of California, Irvine: attractivity, organization, governance, multidisciplinary, territory**

The Swiss Federal Institute of Technology in Lausanne (EPFL with its "Quartier de l'Innovation") and the University of Utah have also served as benchmarks for us, specifically with respect to the "innovation-technology transfer-entrepreneurship" aspect of our Initiative. The promotion of transdisciplinarity, the supporting of young researchers, and the forging of connections between the academic world and industry, have guided the construction of the Academies and the Reference Centers. By accepting to fund incubation centers, accelerators, and the FabLab which is in direct contact with the Reference Centers, local authorities are allowing us to develop along the lines of the innovation park of the Swiss Federal Institute.

The state of Utah has been identified by the Côte d'Azur region as an extremely dynamic territory in terms of job growth and technology transfer, with a growth rate comparable to that targeted by the Côte d'Azur (Utah is ahead of MIT in US technology transfer rankings). In addition, large companies located in Sophia Antipolis are developing subsidiaries in Utah. UCA has chosen to accompany its region in the construction of privileged relations with this American region, including through academic relations with the University of Utah. Notably, Representative Eric Hutchings of the Utah State House of Representatives has agreed to accompany our Initiative by serving on the UCA^{JEDI} Industrial and Territorial Strategic Committee.

→ **EPFL and University of Utah: excellence in innovation and technology transfer**

For training programs that include mandatory mobility, conceived in partnership with companies, and foreseeing rapid immersion in research and R&D laboratories, the UCA will take inspiration from the programs offered by Laval University in Canada. The University of Laval is a university renowned for its state-of-the-art teaching. The training courses offered are especially oriented towards practical applications, and the University proposes a choice of 5 study profiles for its students: International Courses (in a foreign partner university), Entrepreneurial Courses, Research Courses (active participation in a laboratory research project) etc. These flexible, autonomy-generating training courses will serve as a model for developing the UCA^{JEDI} syllabus.

→ **Laval University: a model for training, including rapid immersion in research and R&D laboratories**

Finally, we are following with great interest the developments of the University of Konstanz in Germany. This university, while smaller than other major German universities, was nevertheless awarded an Excellence Initiative in Germany in 2007 and renewed in 2012. The funding provided by the Initiative has had a major leverage effect on the university, and its transdisciplinary program represents for us an example to emulate.

→ **UCA will take inspiration from the trajectory of the University of Konstanz**

UCA^{JEDI} governance is designed to ensure an effective and reactive leadership that will be open to, and will work in close collaboration with, the academic, industrial, and public sector worlds. Led by a President (who is also the President of the UCA) and his or her Cabinet, the governance will rely on two **Strategic Committees**, designed to evaluate and drive the response to scientific, societal and territorial challenges. In addition, all projects and actions approved by the Strategic Committees will be carried out and overseen by specific **Think Tanks** composed of 2/3 experts who are external to UCA.

The **Academies** will enable disciplinary de-compartmentalization, which is still sorely lacking in French universities. The UCA Academies have been conceived and developed in a bottom-up process involving and mobilizing the entire UCA scientific community. We are convinced that it is only through a combined approach involving multiple disciplines that emerging concepts and new scientific paradigms will be able to break out. The Academies will be aimed at developing, in close collaboration with research activities, a range of graduate level training programs that will be transdisciplinary, highly international and attractive, and that will fulfill the expectations of the territory. The programs will be supported both by recurrent funding of strategic projects and by UCA^{JEDI} calls for projects.

The three **Reference Centers** will promote effective connections between academic research and the territory and local authorities, concerning the three major societal challenges to be targeted as priorities. The Centers will be endowed with collaborative technological platforms that researchers, students and companies can use for interacting in order to produce high added value in products and services. The initial endowment for the Centers is already being funded by the partners or by the State-Region Projects Contract (CPER), and funding will continue under the excellence Initiative; this funding will be aimed at developing co-funded programs through calls for projects.

Our vision is also aimed at ensuring a transformative process with respect to the **socio-economic world**. The UCA^{JEDI} organization will increase the visibility of research activities carried out inside the territory, and the bonds created with private sector players will radically change the business model within the UCA. Partnership actions developed thanks to the UCA^{JEDI} initiative will enable a new public-private model to be created. The goal is to place the UCA among the top 50 European Universities as regards commercialization and development by: i) Significantly increasing the volume of contractual research; ii) Becoming a major player in the creation of start-ups; iii) Developing fund raising; and iv) Accelerating the technological structuring of the territory.

In the **Center of Modeling, Simulation and Interactions** (MSI), UCA^{JEDI} will coordinate actions to promote the convergence of modeling, simulation, intensive computation, and big data processing, and in this way open the way to spectacular developments and advances. Our ambition is that this **Center** will become a European leader in these areas, by making these tools available to the entire academic and industrial community.

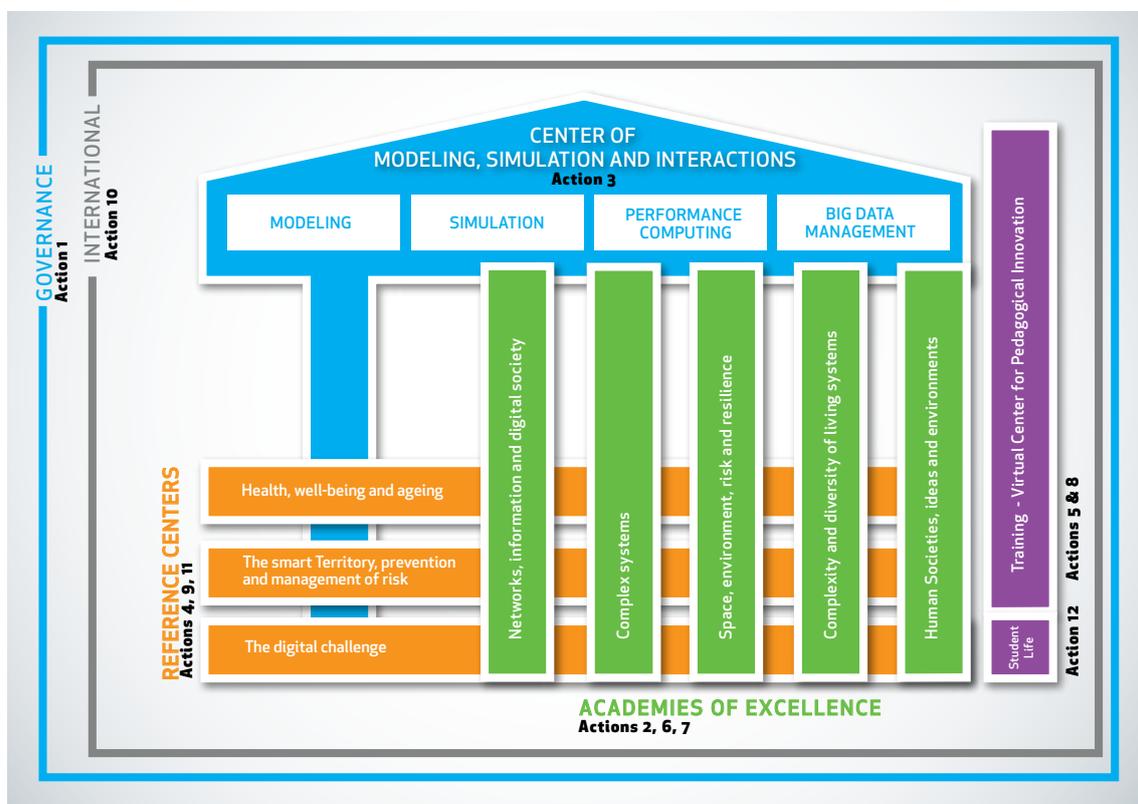
The UCA^{JEDI} training programs will be transdisciplinary and closely linked to the research carried out on site, and will encompass all levels, including undergraduate, graduate, and continuing education. They will rely on modern, innovative teaching approaches, and all programs will be made available online and in English. All of these efforts will be supported by the **Virtual Center for Pedagogical Innovation**, a center dedicated to the development and implementation of innovative digital tools in teaching. This **Center** will interact both with the academic world for the conception and development of new teaching tools, and with the industrial world for their creation and commercialization. All aspects of our Initiative will rely on **UCA^{JEDI} calls for projects**, and we will also place an emphasis on successful searches for **external funding sources**. In particular, we are creating a specific service to assist all UCA structures in responding to major European and international calls for proposals, in order to increase their success rate and start a sustainable funding process through the Initiative.

All in all, UCA^{JEDI} is a long-term project of great transformative power that is being proposed not only for the effect that it will have on higher education and research and for its high profile on the world stage, but also for our territory and its dynamic. The ambition is to build, within four years, an International Graduate School, modeled on the world's best research universities, through the creation of Academies of Excellence and Reference Centers under the triple banner of Research-Training-Innovation. The UCA^{JEDI} organization, over the next 10 years, will evolve simultaneously with the overall project in order to reach goals more quickly. The trajectory is quite simply the timeline of that joint evolution, and UCA^{JEDI} will be the catalyst of the transformation.

Going beyond the privileged relationships that have been established with the universities used for our benchmarking, the UCA intends to profit from the particular strengths of each of its members to construct a core university network within which UCA students will be able to evolve in the context of their mobility. *This strategy is developed in Action 10.1 of this document.*

3. IMPLEMENTATION OF THE PROJECT

The project roll-out can be presented in images as follows.



3.1. STRATEGIC LINES OF ACTION

The strategic axes upon which UCA^{JEDI} is positioned are, firstly, in the form of transdisciplinary topics of excellence. Led by the best teams of the UCA, the projects will be developed inside the five Academies of Excellence. Research into these **five topics** all comprise powerful modeling, simulation and interaction components; these are to be coordinated at the Center of Modeling, Simulation and Interactions (MSI). Finally, these forms of research will take up the **three major societal and territorial challenges** through the three Reference Centers, hosting collaborative platforms, in a global, modern approach, riding on the unstoppable digital revolution.

The **training** offer will be developed **in accordance** with the research priorities. All actions will include a strong **international component**.

The Excellence Academies: “Breaking the Walls”

The Academies will enable disciplinary de compartmentalization. We are convinced that it is through a combined approach involving various disciplines that new concepts and scientific paradigms will be able to emerge. The programs will be supported both by recurrent funding of strategic projects and by calls for projects. The Academies will also aim to develop, in close collaboration with their research activities, a range of graduate training programs that will be both highly international and very attractive, and that will also fulfill the expectations of the region.

NETWORKS, INFORMATION, AND DIGITAL SOCIETY ACADEMY OF EXCELLENCE

The digital revolution, which is now 50 years old, is impacting all human activities, especially due to the universal and instantaneous access that each of us now has to tools for communication and knowledge acquisition and storage. This networking process, involving a large part of humanity, is opening up enormous perspectives for accessing and processing huge masses of distributed data; in the mid- and long-term, this will have a profound impact on all human knowledge. The digital revolution will also transform how human societies are organized; naturally, this will raise troubling questions concerning fundamental individual freedoms, for example questions related to data confidentiality and infrastructure integrity.

These research issues are at the very heart of the Academy's ambitions. Three major goals are driving this approach:

- Designing and experimenting on communication networks of the future, combining high performance (for example innovative wireless photonic devices) with security and energy savings. To these new types of infrastructure must be added new programming paradigms for the development of distributed applications, which will enable the storage, consultation, and indexing of big data, as well as the management of computing platforms and virtualized storage, and smart content processing.
- Developing UCA's excellence in the Digital sciences. This is fundamental know-how, which is not only

required for understanding the structural properties of networks and developing the reliability and security of program and data exchange, but also for modeling and simulating problems in the physical, biological and medical domains. A crucial topic related to this goal is the ability to extract, from large data masses – which are potentially non-structured and partial – structured information and knowledge that is open to semantic processing and interpretation.

- Developing comprehension of the transformation brought about by the digitalization of society, especially the impact of technological innovation and the role of physical artifacts in this transformation, as well as the impact on e-learning, on society, and on citizens, through challenges relating to the Law, to private life, to ethics and even to philosophy.

Acting as the driving force behind the “Digital Challenge” Reference Center, situated at the heart of France's leading Technopark, these areas of research will also act as a driving force behind the other UCA^{JEDI} Reference Centers, and will contribute greatly to the activities developed in the MSI.

The main laboratories:

- The Inria center of Sophia-Antipolis, with a staff of nearly 500 personnel, <http://www.inria.fr/en/centre/sophia>
- I3S (Laboratory of computer science, signals, and systems), with close to 300 scientists, <http://www.i3s.unice.fr/en>

COMPLEX SYSTEMS ACADEMY OF EXCELLENCE



Recent decades have witnessed the emergence of a movement for studying complex systems that goes beyond the limits of conventional scientific domains. The goals are, first, to discover the common fundamental principles that govern the behavior of complex systems, as suggested by observation and experiments; and second, to identify and utilize the super-structures that guide the dynamic behavior of such systems. Such super-structures cannot easily be deduced from local characteristics at the unit level. The established robustness and adaptive stability of such systems can then be put to good use in a great number of applications. This Academy already possesses a remarkably broad spectrum of scientific activities related to complex systems, from mathematical to societal models, including complex environment physics, extreme phenomena, networks in the broad sense of the term, systems biology, and chemical interactions.

- The ambition is multi-faceted;
- The academy will encourage, through transversal research topics, the identification of common methodological approaches and the emergence of shared study objects, while generating feedback on the strong points of existing knowledge, both in fundamental research and for technological knowledge transfer;
- It will create and reinforce links between teams from different domains, and combine existing skills in the modeling and simulation of complex systems, in order to place them effectively at the service of significant current societal issues; these efforts will be linked to partners in the fields of health, energy, the environment, materials, and communications.

- We will differentiate the site by building on the success of the Mathematical-Physical interface, to leverage opportunities and the effects of momentum on other disciplines, especially mathematics/biology/IT; physics/biology, and all the fundamental sciences/Human and Social Sciences (HSS). At the crossroads of all these disciplines, the convergence of activities around the neurosciences and cognitive science modeling must show the way forward, to initiate closer ties in dealing with transversal issues (in the methodological or resource-related sense).

The challenge will be to position UCAJEDI at the heart of the development of the "Sciences of complexity," in conjunction with societal and industrial interests. The Sophia Antipolis Technopark, the Eco-Valley campus, and the Pasteur neighborhood all constitute fertile ground for the activities in which the Academy is involved, including in the Reference Centers implanted in each of these sites.

The main laboratories:

- LJAD (laboratoire Jean Alexandre Dieudonné Mathematics), with 186 scientists
<http://math.unice.fr/laboratoirerepr%C3%A9sentation-du-laboratoire>
- INLN (Non Linear institute of Nice) <http://www.inln.cnrs.fr/>
- LPMC (Laboratoire de Physique de la Matière Condensée), <http://lpmc.unice.fr/?lang=en>
- CRHEA (Centre de Recherches sur l'HétéroEpitaxie et ses Applications), <http://www.crhea.cnrs.fr/crhea-en/index.asp>

SPACE, ENVIRONMENT, RISK, AND RESILIENCE ACADEMY OF EXCELLENCE



Observing, modeling, and understanding our environment – the land, oceans, near space and the universe – is a major challenge for the 21st-century, and will be necessary to give our societies a degree of control over the natural and artificial hazards that threaten our territories.

Thanks to its position at the frontier between the Alps and the Mediterranean--as well as its geodynamic context, its extreme topography (going from a deep basin to high mountains in less than 80 km), the number of challenges it faces (human, material, economic), and the rapid increase in population density, especially along the coastline--the Côte d'Azur is a highly relevant region for demonstrating and studying natural risks and hazards. These risks and hazards must be considered not only separately (earthquakes, landslides, floods, tsunamis, submersion, fire, extreme climatic phenomena) but also in combination (a tsunami caused by an earthquake or by gravity, for example). Understanding these phenomena will contribute to the knowledge that will allow the most effective preparation for such events.

The primary originality of this Academy is to include the creation of the tools and databases of the future in our approach, in order to better enable the monitoring and characterization of the planetary and space-based risks we are facing, on widely different scales. Another original aspect will be to place man and human behavior in the context of this scientific strategy. Three powerful ambitions are driving this approach:

- First, we aim to increase our capacity for innovation and design with respect to instrument manufacturing and data processing for the observation of space and the Earth, in order to play a leading role in the steering of European space agency programs such as ESA, ESO, EGO, and EPOS, in conjunction with the major aerospace

industrial groups and competitiveness clusters.

- Second, we plan to develop our ability to evaluate natural and artificial hazards on land, at sea, and in near space, by analyzing the resilience mechanisms of our society in the face of such hazards.
- Third, we will reinforce our expertise and know-how in the modeling of environmental phenomena and the direct utilization of mathematical models, in order to optimize our approach to the observation of natural environments and space. The goal is to tease out innovative approaches in integrated modeling between the physical, systemic (the function of living networks), and societal approaches.

The use of resilience strategies based not only on individual actions (adaptation of human behavior in catastrophe situations) but also collective ones (public management and territorial risk planning) will be developed, especially in the Eco-Valley "Smart Cities and Risk Management" Reference Center.

The main laboratories:

The laboratories carry out fundamental research with a strong proximity among the researchers on campus, in particular those specialized in mathematics and physics:

- Laboratoire Lagrange, <https://lagrange.oca.eu/?lang=en>
- Laboratoire GéoAzur, <https://geoazur.oca.eu/?lang=en>
- Laboratoire Artémis <https://artemis.oca.eu/?lang=en>

COMPLEXITY AND DIVERSITY OF LIVING SYSTEMS ACADEMY OF EXCELLENCE



The extraordinary rise of biological design over 15 years of unbroken technological progress is bringing fundamental changes to scientific approaches in genetics, molecular biochemistry, imaging, integrative biology, and medicine. A network of living systems research laboratories, which is both structured and dynamic, has been set up in Nice and Sophia Antipolis, including at the very heart of the University Hospital Center (CHU). With state of the art research in pharmacology, signaling, membrane transport, psychiatric disorders, adaptation, evolution, and development, its work directly involves important questions related to public health (cancer, pathologies, metabolic inflammatory disorders, biocontrol, plant resistance, ecological management of agrosystems). This Academy therefore proposes addressing three major scientific challenges of the 21st century – the pursuit of which is part of an ongoing historical process within UCA's territory – while at same time allowing it to enlarge and reinforce its scientific position on the national and international stage, including by effectively accompanying the birth and development of a local bio-industry. This community therefore possesses undeniable advantages in achieving the following goals:

- Rapid processing of new data, incorporating local data with large masses of remote data. The construction of relevant physical or mathematical models will provide the most precise information regarding the biological system or systems being explored.
- Systematic exploration of the special characteristics of an individual or a species, for example to identify common characteristics that link similar biological objects coming from distant species in order to detect very early forking in the direction of pathological states, not only in man but also in animals and in the plant kingdom. This will be based on an integrated metrological approach to living systems, rooted in collaborative work with physics, IT, chemistry and

engineering sciences. Priority will be given to the development of new technologies that are able to measure very large numbers of parameters, on a scale ranging from single cells all the way up to an organism in its complex environment.

- Initiating bio-inspired approaches in such areas as information storage, new experimental models of living systems, or pharmacological screening, which, thanks to the level of sophistication that is rapidly becoming available in the biological sciences, will become possible in the near future.

These developments will take place through the biotechnological platform dedicated to eco-innovation that is planned for the Sophia Antipolis site. The Health, Well-being, and Aging Reference Center in Nice (Pasteur), for its part, will enable an intensification of research and experimentation in the use of digital techniques in the "health and aging" field. In all cases, priority will be given to the development of new and original experimental approaches with strong added value.

The five major biology institutes within the Signallife network of excellence (<http://signalife.unice.fr/>, encompassing a staff of 950):

- L'Institut de Biologie de Valrose IBV (UNS, CNRS, INSERM) <http://ibv.unice.fr/EN/index.php>
- L'Institut de Pharmacologie Moléculaire et Cellulaire IPMC (UNS, CNRS) https://www.ipmc.cnrs.fr/cgi-bin/standard.cgi?descriptif=admin_accueil_txt&dossier1=presentation&dossier2=adminaccueil&lang=uk
- L'Institut de Recherche sur le Cancer et le vieillissement IRCAN (UNS, CNRS, INSERM, CHU) <http://ircan.org/>
- Le Centre Méditerranéen de Médecine Moléculaire C3M (UNS, CNRS, INSERM, CHU) <http://www.unice.fr/c3m/>
- L'Institut Sophia Agrobiotech ISA (UNS, INRA, CNRS), at the interface between agriculture / environment http://www6.paca.inra.fr/institut-sophia-agrobiotech_eng/

HUMAN SOCIETIES, IDEAS AND ENVIRONMENTS ACADEMY OF EXCELLENCE



Very profound changes are currently overtaking our societies. They concern diverse but interdependent and complex processes such as economic and political globalization, climate change and anthropomorphic impact, the digitalization of relationships between individuals and/or organizations, and the financialization of the world economy. At stake are the creation, circulation, and distribution of social wealth, and the context of the relationships between humans with their natural and societal environments. Analyzing the contemporary transformation of human activity will require more than the use of the conventional images and resources of the humanities and social sciences; it will also require the application of certain scientific domains that have been until now considered isolated and autonomous, in a spirit of transdisciplinary logic. In addition, it will necessitate a recognition of the need to combine different approaches towards the phenomena under study, but without sacrificing coherence.

Our ambition calls most especially for an analysis of three aspects of the transformations currently affecting our societies. The approaches developed in this Academy have a distinctive characteristic, in that they all make extensive use of digital technology and modeling.

- The first aspect, in a historical perspective dedicated to times of great change, concerns itself with the various relationships that mankind has maintained with its natural and cultural environment during phases of great transition.
- The second dimension, which is particularly essential today, addresses the emergence of ideas, their modes of diffusion (distribution of discourse, web philosophy, social networks, artistic creation, etc.), of the transformations they undergo, and how they relate to the changes in question.

- The third dimension deals with the identification of new fundamental characteristics of contemporary societies, and the analysis of their consequences with respect to societal, cultural and economic organization and dynamics. The place, significance, and impact of new generic technologies (communication and information technology; nanotechnologies, etc.) on the cultural and economic environment of contemporary societies and communities will be studied.

The approaches developed in this Academy are distinctive within the French human and social sciences in that they make extensive use of digital technology and modeling. They too will benefit from the dynamics set in motion by the MSI. All in all, comprehension of the determining factors of these societal changes will provide a better understanding in order to follow and accompany the new ways in which markets, organizations, and territories operate and behave. The fields of application will be developed in the three Reference Centers and rolled out throughout the territory, for example in the tourist sector, the artistic domain, and in inter-company relationships.

The "Maison des Sciences de l'Homme" (South East; <http://mshs.unice.fr>), the Business School research laboratories, and the Art Schools College, will all participate in structuring the activities carried out in this Academy.

The Center of Modeling, Simulation and Interactions (MSI): “Come Together”

UCA^{JEDI} intends to incorporate the **digital approach at the highest level** inside the Center of Modeling, Simulation and Interactions (MSI). Large-scale observation and in silico experimentation, such as the acquisition, processing and display of very big data, are conceptual approaches common to the research activities of all of the Academies of Excellence. More especially, this approach, with a strong modeling component, calls for research methodologies in the site’s human sciences, giving it specificity, and guaranteeing international visibility.

By opening new research into major challenges: new coordination modes, the construction of social networks, protection of individuals, access to information, and data sharing and storage, the MSI will generate relevant models that will serve as **decision-making tools** for innovation:

- for the competitiveness of companies and the management of economic risk;
- for economic opportunities coming from applications for the utilization of data;
- for guiding complex processes, especially in terms of preventing risk to the territory.

For each of the transdisciplinary topics, the ambitions being addressed, the strengths present, and the recognition of excellence, are set out in the tables in Appendix 1.

The MSI will encourage the emergence of multidisciplinary project teams, and the performance of transdisciplinary work. It will address all aspects of modeling (theoretical studies of “toy” models; design and theory of models; model (i.e. computational) calculation capacity; implementation of realistic models; interactive and iterative approaches to models; construction of experimental models etc). It will also concern scientific computation, from mathematical and numerical analysis all the way to intensive computation as well as the issues facing the display of and interaction with the simulation processes.

The Reference Centers: “Wind of Change”

Finally, UCA^{JEDI} will address three major societal challenges that correspond to identified priorities of the Côte d’Azur region and build upon strengths already present in the territory (industrial facilities, campuses, support for innovation, etc). Through its Reference Centers, UCA^{JEDI} will forge an effective connection between academic research and the territory, and also promote a multi-player approach between public structures, private structures, and local authorities regarding the following topics:

- **The “Health, Well-Being and Aging” Reference Center** will be implanted on the Nice East Health campus; this is an ideal spot for developing biotechnology domains, especially the clinical, information, and communication technologies dedicated to the Silver Economy.
- **The “Smart Territory, Risk Prevention and Management” Reference Center** will be implanted on the Eco-Valley campus. It will be present within the Mediterranean Risk, Environment and Sustainable Development Institute (IMREDD), which will host the platforms for collaboration between public research and private laboratories in four main areas: smart buildings and energy, water cycle, risk and environment, and intelligent sustainable mobility.
- **The “Digital Challenge” Reference Center** will be developed on the SophiaTech campus, which is also the emblematic venue of French Tech. It will host research and training actions intended to accompany the new development of the Techno Center, especially in the biotechnology and digital domains, with the cross-fertilization of academic and industrial research laboratories.

We note that these three societal challenges are strongly correlated and interact on many levels, and also that each of them calls not only on the “hard” sciences but on the humanities and social sciences as well.

To create ecosystem sites that are effective for developing start-ups, UCA^{JEDI} will give priority to

collaborative platforms that will constitute cross-fertilization venues between researchers, students, and engineers in the Reference Centers. The added value of the IDEX UCA^{JEDI} will be the “integrated” dimension of the services offered to the economic world, with expertise provided on acceptability and ethics (HSS), and design and the business model (business schools); in addition, the services will be reinforced through coaching (incubator) and financial (accelerator) support.

The Virtual Center for Pedagogical Innovation (VCPI): “Learning to fly”

The five Academies will be aimed at launching à la carte excellence training programs with Major and Minor areas of specialization, developed within an international network, along with ad hoc funding, and rounded out by Summer Schools and Masterclasses of international renown (prizewinners from International Grand Prizes, Academicians, ERC’s, etc). **The Virtual Center for Pedagogical Innovation (VCPI)** will bring together available skills, instruments and databases, accessible on a dedicated platform, to enrich student and/or employee training, and to accompany innovative entrepreneurs.

The VCPI will support this ambition through:

- training and accompaniment in innovative teaching techniques (including docimology);
- technological, scientific and partnership watch, leadership for partners’ workshops in the domain, commercialization of partners’ facilities and actions as well as organizing export of them to the international stage.

3.2. ACTIONS

The proposed actions systematically link activities related to training, research, innovation, and international attractiveness. They include structuring actions that can be immediately applied in view of the current configuration of the UCA, as well as actions aiming to drive the emergence of new programs through calls for projects, designed in the course of a Think tank Process specific to UCA^{JEDI}.

Through these actions, UCA^{JEDI} will function as follows:

- The Academies and the Centers explore: an exploratory imaginative phase is conducted in the Academies and Centers.
- UCA^{JEDI} coordinates: The Scientific Strategic and Industrial and Territorial Strategic Committees propose to the President and his or her Cabinet and steer the development of the main UCA^{JEDI} priorities, especially through calls for projects.
- The Think tanks select: The think tanks, partially composed of the members of the UCA Academic Council (1/3) and partially of external experts (2/3), assist the executive governance in coordinating the short, medium, and long term transformation strategy by selecting projects, on the basis of their scientific quality and their transformative effect.
- UCA integrates: The Scientific Strategic and Industrial Territorial Strategic Committees evaluate projects that have been deployed and propose an integrative, dynamic application of the projects in line with global UCA scientific policy. Upon completion, and if successful, the project is incorporated into UCA, in the form of a new team, laboratory, Institute, Master or Ph.D. program, etc.

3.2.1. Structuring Initiatives for Excellence

▶ Action 1 – Setting up the governance

The governance of the UCA^{JEDI} will be carried out by the **same decision-making bodies** as those governing the ComUE UCA, which have been designed to guarantee a level of reactivity adapted to an excellence initiative.

The Executive Board, which has been in place since July 2015, will ensure institutional representation. The Academic Council, in place since October 2015, is structured into “colleges” of researchers and teacher-researchers that are representative of the five Academies. They will participate in the selection of calls for projects, in order to **guarantee coherence** with the Initiative with respect to recruitment and the distribution of recurrent funds. This participation will occur through the Think tanks. The Think tanks will be made up of individuals from the Academic Council for the first third, and the other two thirds will comprise external experts appointed by the strategic committees.

The UCA President, who was elected in October 2015, will be assisted by four Program Directors (Research, Training, International, and Innovation), making up the President’s Cabinet. Each Program Director will, in turn, manage an **operating group** corresponding to their area of influence.

▶ Action 2 – Implement the five Academies of Excellence

The governance of the Academies will be carried out by a **Steering Committee** made up of up to eight members, representing the members of the UCA and its partners. Each Steering Committee will be guided by a **Scientific Committee** made up of representatives from each scientific domain encompassed by the Academy. The Academies will have several types of resources at their disposal: funding to allow them to develop transdisciplinarity within their research perimeter, and calls for projects to transform test initiatives into longer-term actions that can be implemented internationally. The objective defined for each Academy will be to increase the level of excellence of the research carried out on site, both by promoting new, high-level projects and by enlarging the local perimeter of excellence, along the indicators set out by the Steering and Scientific committees of each Academy. The Academies will also have the goal of decompartmentalizing disciplines while simultaneously reinforcing them, **to reinvent the sites of intellectual exchange** and development that can lead to the emergence of new concepts. A number of premium support services will be created, to accompany the beneficiaries of the Initiative through projects to allow them **to focus entirely on their research and training work**. For example, to improve the level of UCAs international research publications, UCA^{JEDI} will create a Service of International Scientific Visibility, comprising a team of native English-speaking scientists from the diverse disciplines covered by each Academy, who will assist in the editing and submission of English-language research articles written by members of the UCA research community.

▶ Action 3 - Implement a venue emblematic of excellence: The Center of Modeling, Simulation and Interactions

The development and control of modeling and simulation tools are a major issue in many scientific disciplines, in responding to current and future challenges in research and technological innovation.

To respond to this challenge, there is a need to develop a **transdisciplinary scientific and technical environment**, and through specific funding and dedicated human resources, to support the federating projects. This is how the Center of Modeling, Simulation and Interactions (MSI) strives to be a center for the **exchange of ideas**, implanted on the Sophia Antipolis site. Moreover, its ambition is to play a **structuring role** in transdisciplinary exchange; it will provide a **language common to the various disciplines** characteristic of UCA^{JEDI}.

The MSI will aim to:

- Build high-level training programs (initial, advanced and ongoing) for modeling and scientific computing, as well as participation in the training courses (hosting students in professionalizing projects) and the creation of **MOOCs and SPOCS** (Small Private Online Courses); these actions will be carried out in collaboration with the Virtual Center for Pedagogical Innovation;
- Create scientific coordination within the framework of topical workshops, encounters between the different UCA players in modeling, simulation, calculation and display;
- Create a strong link with the local industrial base around modeling and digital simulation, through the three Reference Centers.

The MSI will be managed by a Director, who will oversee a scientific team in charge of implementing the center's actions.

► Action 4: Roll out the excellence facilities in the three Reference Centers

The initiative also provides leverage for the rolling out of scientific facilities of excellence that will benefit multiple research domains. The use of **state-of-the-art scientific equipment** that meets international standards has become an imperative condition for competitiveness in all disciplines on the international stage. Located in the Reference Centers, on collaborative platforms, these facilities are also aimed at offering resources (equipment, personnel and associated services), enabling completion of research and development **projects with strong added value** (innovation projects, trials and tests, prototype development); they can even serve as "living labs." All scientific and technological domains are concerned in this action. UCA CPER funding requests have already been made for the initial equipment.

A general Director and three associate Directors (one for each Center) will be nominated, who will work closely together to coordinate the overlapping missions of each center.

► Action 5: Take up the digital challenge for training, by creating a VCPI

The main goal of this action is to create experimental venues for innovative digital teaching through a Virtual Center for Pedagogical Innovation (VCPI), which will bring together skills, instruments, and available databases for all forms of training. In addition to providing equipment and accompaniment in the **creation of digital resources**, venues will be designed to provide all teachers instant access, in all de-materialized formats available (audio, video, text, multimedia files), to the latest publications in their discipline, giving them great freedom in preparing their classes.

UCA^{JEDI} combined with member establishment funding will be aimed at supporting the following activities:

- **inverse teaching** combined with discovery teaching;
- project teaching in teams for **proactive and committed students**;
- positive teaching approaches combined with progressive assessment methods (ongoing, diversified – especially based on skills and on peer-to-peer evaluation) with **strong incentives for success** (prizes and funding for studies);
- Immersive teaching: immersion in laboratory or company as an integral part of training
- **experimental/simulation teaching** (especially through the creation of experimental simulation centers and intensive use of computer aided experimentation).

Implementation of these new approaches goes hand-in-hand with the acquisition of new teaching resources available remotely (enhanced teaching media, bibliography, evaluations). These actions will be extended to all students of UCA, with a particular focus on increasing university graduation rates.

The VCPI will be managed by a Director, who will oversee a team in charge of implementing the center's

actions.

Joint Coordination of the Academies and Centers

All of the Directors of the different Academies and Centers will participate in at least three joint meetings per year, which will allow the transdisciplinary dynamics to be maintained and the preparation of responses to the calls for projects. In addition, each Director will interact intensively with the UCA President and his or her Cabinet. A simple and dedicated information system will be put into place and a quality assurance charter will be implemented and applied. The incentives system will guarantee the dynamics of the trajectory. This organizational model will help bring about an institutional transformation, to put it in the service of intellectual innovation.

3.2.2. Re-inforcing Excellence through Calls for Projects

The vast majority of the funding actions of the Initiative will take place through Calls for projects, whose functioning, involving the **Strategic Committees** and a network of **Think tanks**, is described in more detail below. The following section presents the specific funds that will be created to support the various actions.

▶ Action 6: Support and assist emerging excellence in research, innovation and transfer

Three funds will be set up to drive the research topics addressed in the five Academies:

6.1 The “Excellence” Funds, the largest of all UCA funds, will provide funding of 2.5 million euros yearly for Academy research activities, and will be accompanied by the funding of a Ph.D. student, a postdoctoral student or an engineer over three years. This funding could be accompanied by the definitive recruitment of a researcher or teacher-researcher after evaluation of the project.

6.2 The “Emerging Talents” Fund will encourage the setting up of a team by exceptionally talented, early stage researchers from all over the world. This fund will provide hosting and operational funding of 100 K euros per year over five years, as well as funding of the primary investigator, two Ph.D. students, and a postdoctoral fellow or engineer over five years. After evaluation of the project, the emerging team could be stabilized through the definitive recruitment of a researcher or teacher-researcher, and will be slated to join one of the UCA laboratories or institutes.

6.3 The “Senior Tracks” Fund, endowed with 300 K euros per year, will be aimed at funding sabbatical stays by internationally renowned lecturers, and/or long-term recruitment of researchers of high scientific potential.

6.4 The “Challenges” Fund will finance transdisciplinary projects on identified challenges, and will involve at least two teams. Each selected project will receive 100 to 150 K euros per year over three years; these may be complemented through private funding. Funded projects will also be endowed with two structural contracts and two postdoctoral or engineer contracts over three years.

6.5 The “Innovation” Fund will finance projects linked to identified challenges, mandatorily involving one or more companies. Each selected project will receive 100 to 150 K euros per year over three years, mandatorily rounded out through private funding and accompanied by a doctor-engineer.

6.6 The “Pre-Maturation” Fund will be aimed at identifying and supporting, through specific calls for projects, scientific and technological projects in the pre-maturation stage. The levels of technological maturity concerned are TRLs 2 to 3, in which the application is still speculative, and where analyses and processes of confirmation are needed. The fund will create a link between theoretical results already obtained in the laboratory and proof of concept, and will therefore create a constant wave of transfer and innovation. The SATT Southeast, participating from the project selection stage, will incorporate questions of intellectual property in the process of producing results and publications.

▶ Action 7: Attract doctoral students with strong potential to UCA^{JEDI} Doctoral Schools

The ambition of UCA^{JEDI} is to develop original Ph.D. programs. **Privileged hosting conditions** will be proposed to attract the best international Ph.D.'s. All UCA^{JEDI} **thesis contracts will be coupled with a one-year contract** and an **operating endowment** (up to 50,000 euros) to accompany the Ph.D.'s primary research activities. This one-year contract can be pre- or postdoctoral, can take place in France or abroad, and must be devoted to studies in a discipline that is complementary to the initial training; they may include, for example, work related to specific innovation and entrepreneurship training, or to carry out a personal innovative project (commercializing the results of a thesis, creating a start-up, an artistic project; creating a MOOC, etc). Reflecting the diversity of UCA members, UCA Ph.D.'s will include new areas of study taking place, for example, at the interface of arts/living arts/sciences/history of ideas, etc.

Ph.D.s will enjoy online training in their discipline as well as digital doctoral programs co-created with other Ph.D. Schools in France or abroad. **Outward mobility** of at least **six months** will be **mandatory** for all French Ph.D.s in international networks set up by UCA^{JEDI}.

For some doctoral students, the trajectory is aimed at driving innovation and R&D, including a minimum **six month internship in a company** and a real-world private R&D tutor, in addition to the thesis supervisor. These internships will be accompanied by specific training modules, some of which will be generic, concerning corporations, innovation, the economy, intellectual property, innovation design, and project management (business plan, societal impact, sustainable development etc.). Such modules will be created with the participation of the SDS, EDHEC, and Skema schools.

Finally, the UCA^{JEDI} Ph.D. Schools will work with corporate networks for the commercialization of Ph.D. work, and will pay special attention to **developing alumni networks**. In the long-term, a network of entrepreneur Ph.D.s, moderated online through a dedicated social network, will be set up, and will enjoy the support of UCA research institutes for their R&D. Preferential access to UCA services and facilities will be offered to Alumni, such as special rates for ongoing training, renting of conference rooms, event organizing, etc.

▶ Action 8: Setting up integrated, international, and multidisciplinary curricula

UCA^{JEDI} courses are intended to serve as “demonstrators” of a new training model, regarding both tools and methods:

- they are highly demanding, through the **selection of students** based on academic criteria and projects, as well as their professional and personal goals; recruitment will take place through established international channels, and will take advantage of the experience of the Labexes in this area.
- they incentivise success and excellence, **awarding fellowships** and excellence prizes, providing access to major schools through partnerships;
- developing autonomy and **encouraging risk-taking** and the culture of collaborative resourcefulness through genuine business adaptability;
- they are **flexible** and open-ended (selected Majors and Minors, digital training tools, etc);

- they incentivise complementarity of contributions from academic and business environments, including **international mobility**
- they use active pedagogical methods and are accessible remotely for at least 50% of their content, and are available in English.

UCA training programs will lead to UCA University Diplomas, and will require specific tuition fees to cover part of their operating costs (estimated around 2000€/year/student). A system of fellowships of excellence will guarantee access to candidates from all social categories. Finally, the official French process of "Validation of Higher Learning" will make it possible to award corresponding national Bachelor's and Masters diplomas to students at the end of the course.

8.1 / Label level 1

The UCA^{JEDI} level 1 label will give access to specific funding for the selected program, teachers and trainees. This label is a first step towards the ESPER and D2EP programs (see below). Each program selected will benefit from an early stage fund of 100K euros and from a fund dedicated to the mobility of students of 60K euros.

8.2 / Education Star Program for Excellence in Research (ESPER)

The ESPERs are new Bachelor's-Graduate courses adapted to research, and characterized by:

- at the Bachelor's level, selective and demanding training with an approach to two main subject areas (one Major and one Minor), including access to research with individualized guidance in a research laboratory;
- at the Graduate level, individualized training in at least two main areas (double Major) including a six-month initiation into UCA^{JEDI} laboratory research, and a six-month experience in a UCA^{JEDI} international network laboratory, or in a company abroad. The students selected for these training courses will receive fellowships for mobility accompanied by funding that will allow them to cover their research costs in their academic laboratories.

8.3 / Double Expertise Professional programs (DE2P)

The DE2Ps are courses integrated into Bachelor-Graduate or Graduate levels, allowing for the development of double expertise by pooling the skills of at least two UCA partners. They are oriented to professionalization at the "senior manager" level and/or to applied Ph.D.s or to Ph.D-engineer training. They will be rounded out by two real-life professional situations lasting six months each, one in a company partnered with the territory, and the other in a laboratory or a company abroad. The students selected for these programs will receive mobility fellowships.

All of the directors of these educational programs will be trained in evaluation methods (for example, the Certificate in Education Policy and Program Evaluation, Georgetown University).

► Action 9: Propose a "Market for solutions" for life-long learning

This action is intended to build up an electronic platform where specific demands from private industry and from local authorities can be met by specific programs developed by UCA^{JEDI}. **Several training formats** will be offered:

- Summer School of Excellence (one week): short specialized training modules, topical, linked to territory

specific research, taught by high level researchers or by recognized business professionals, with support from the state-of-the-art infrastructure available at the reference Centers;

- Post-Graduate Masters: longer training modules destined for the wider public, encouraging the resumption of studies; also aimed at professionals seeking additional training and/or the diversification of their skills;
- Professional Ph.D.s: postgraduate training combining theory and real-world application for active business professionals or those resuming their studies, in partnership with research laboratories;
- Modular custom-made training, created with UCA partners mainly for two objectives: international export (languages, civilization and culture, and access to international UCA networks); and innovation (methodology of innovation and experimentation of collaborative resourcefulness).

▶ Action 10: Deploy an ambitious international strategy

10.1 / Setting up topical UCA^{JEDI} international networks

The international policy of the Initiative aims to promote the visibility and attractiveness of the University of the Côte d'Azur around the world, and to ensure the international deployment of its activities. To do this, the UCA will naturally rely upon the existing international relationships of all its members, which involve up to 1000 universities and centers. However, the UCA will also focus on specific thematic international networks. In particular, we intend to build on the **comparative advantages and areas of specialization of the site**. We will rely, first of all, on a bottom-up process, originating in our Academies and Labexes, to reinforce our existing partnerships with top-tier universities to create an international network with the Côte d'Azur as a node. Conferences and events with a transdisciplinary focus will be organized on the Côte d'Azur, at the crossroads of our international disciplinary relationships of excellence. A first step in this direction has already been taken, by identifying, for each of our Academies, prestigious universities with which our researchers have had long-standing collaborations. At the crossroads of the different Academies, we have found a number of universities, including the UC Berkeley, Stanford University, UC Irvine, and Cambridge University. These universities will represent privileged targets for our mobility networks of excellence. We intend to establish permanent offices or campuses within the University of the Côte d'Azur for each of these partners (to facilitate, for example, apartment reservations in the Faculty club, access to UCA premium services, etc.).

A top-down process will also be carried out to extend our international policy through the three Reference Centers. Here, the goal is to promote the UCA as an internationally visible, major actor concerning a select number of **societal challenges that have particular relevance for our region**. Partner universities for these thematic networks will be selected as a function of their expertise and prominence regarding the theme in question, as well as their ability to transfer their activities to the socioeconomic world.

It is in this spirit, and as a first example, that the University of Utah, which has become a major actor in the United States regarding innovation and transfer towards its region--with which it has very close ties--has been identified. The implantation of a center of the Amadeus company in Salt Lake City, and the upcoming twinning of Nice Côte d'Azur with Salt Lake City, has further convinced us of the soundness of the decision to establish close ties between the universities of our two regions. E-travel represents a major theme of this international, multi-actor collaboration. In addition, Representative Eric Hutchings of the Utah State House of Representatives, who is one of the Global Ambassadors of the University of Utah, has agreed to accompany our Initiative by serving on the UCA^{JEDI} Industrial and Territorial Strategic Committee.

The topic of "Smart Cities" and, more precisely, of the management of territories subjected to multiple constraints and to high seasonal variations in population, is a central focus of our second Reference Center. The constitution of a thematic network of universities working in this area due to the particular characteristics of their regions is underway. As a second example, the University of Tianjin, our partner in the creation of the Confucius Institute of the Côte d'Azur, which will open its doors in several months, has

declared its interest in jointly investing in research, training, and engineering innovation in this area. The authorization that we recently obtained from the Hanban (Confucius Institute Headquarters) to open a “Business” Confucius Institute, going beyond the traditional linguistic and cultural missions of such Institutes, will facilitate the search for industrial Chinese partners. In addition, the global vice president of IBM for smart cities, Michael Dixon, has agreed to serve on one of our Strategic Committees.

A third example is provided by the IRCAN, a new international laboratory specialized in the question of aging. IRCAN is associated with the Sino-French Research Center for Life Sciences and Genomics (partnership between the CNRS, INSERM, and the Pasteur Institute on one hand and with five Chinese institutes on the other), which is hosted by the Medical School of the University of Jiaotong in Shanghai. At the same time, the ORPEA company, which specializes in retirement homes, wanted to expand their operations to China. Taking advantage of our existing collaborations, we created, in partnership with ORPEA and with the University of Jiaotong in Shanghai, a training program in retirement home management. The presence of the Inria (LIAMA) will allow coverage of aspects linked to the role of new technologies in health and home care. Finally, the SKEMA's Manager-Engineer training programs will complete the projection of the UCA onto Shanghai. Overall, of the four Chinese sites particularly targeted by the French Foreign Ministry in view of the strong presence of French subsidiaries and affiliates (Shanghai, Wuhan, Chongqing and Kunmin), two include privileged UCA partners.

These three examples concerning our Reference Centers are currently being developed to give rise to true networks comprising universities and public and private organizations, of which the UCA will serve as the international bridgehead. The dynamic of the construction of this type of thematic network, at the convergence of academic and socioeconomic interests, will allow the mobilization of multiple sources of funding that will help support the developmental strategy of the UCA in the long term. The funding provided by the IDEX will allow us to initiate this model.

Finally, our international policy will encourage the inclusion of French-speaking partners into these thematic networks. Even though our research and training activities linked to the IDEX will take place in English, it is important for us to maintain and promote our existing relations within French-speaking university networks (AUF, Alliance française, etc.). This will be a critical vector for the deployment of UCA actions on all continents, both to help enhance our international influence and standing as well as to do our part to contribute to the international French presence in science, culture, art, and business.

The international deployment of the UCA through its global campuses and offices and through its international partnerships will also allow the **recruitment process to be extended throughout the world**. Further, international French institutions (embassies, cultural centers, French alliances, AUF) have been aligned to optimize the diffusion of UCA information and logistic support.

Support services such as an Admissions and Outreach Service and an international student housing service will also be created to promote UCA graduate programs around the world, notably through participation in international recruitment fairs, forums, and conferences.

		European Universities	Academy	Themes	Specific complementary asset
PARTNERSHIP OF EXCELLENCE	EUROPE	Oxford University	2,5	Modelling, Entrepreneurship	Links with smart territories
		Cambridge University	2,5	Cognitive sciences, Modelling, Management	
		University of Copenhagen	1,3,5	Observation, Earth, Environment	UCA (Inria, UNS, CNRS, SKEMA) INSERM
		EPFL (Switzerland)		CASA, Thales Alenia Space	UCA (Inria, UNS, CNRS, OCA) IRD
		Université de Liège	1,3,5	Observation, Earth, Environment,	CASA, Thales Alenia Space
		Euromediterranean Consortium : UCA, UPMC, Corse, Toulon, Gênes, Turin, Pise	3,5	Digital humanities, Observation, Big data	Observatories
	INTERNATIONAL	University of Utah	1,2	Digital challenge	State of Utah, Utah state representative member of UCA strategic committee, Amadeus
		MIT	1,2	Digital challenge	Amadeus, IBM
		Stanford University	1,4,5	Health	
		UC Irvine	2,5	Risk, digital challenge, health	Chancellor member of UCA strategic committee
		UC Berkeley	1,3,4,5	Health, Risk, Management	Double diploma, permanent invited professor, in geophysics, European Innovation Academy Network
		National University of Singapore and Nanyang Technological University	2,5	Cold atoms, Finance	International joint Laboratory, Edhec Campus
		Shanghai Jiao Tong University	1,4,5	Health, Management, IT	International joint Laboratory, Skema Campus, Inria research center, ORPEA group
University of Montreal	1,4,5	Health			
STRONG DYNAMIC	University of Chile	1,2, 3,5	Observation, Earth, Environment, modeling	Observatories	
	Danang University	2,5	Risk, Digital Challenge	MESR Vietnam	
	East China Normal University	1,4,5	e-santé, Management	MAE China	
	USTH (Vietnam)	1,4,5	Health	MESR Vietnam	
	Tianjin University	2,5	Risk	MAE China	
	RANEPA (Russia)	2,5	Economics, Public Management	Double diploma, RANEPA office in Nice	
FRENCH LANGUAGE NETWORK	University of Tunis	2,3,5	Mathematics, Economics, Risk management	International joint Laboratory	
	University of Casablanca	2,5	Modeling, Economics, Management	Double diplomas, EDF	
	University of Abidjan	2,4	Medecine, Law	NCA Metropole	
	University of Marrakech	2,5	Mathematics, Management	International joint Laboratory	
	Baikal State University	2,5	Mathematics, Economics, Management	Double diplomas	
	University of Montenegro	2,5	Tourism, Mathematics, Economics, Management	Double diplomas	
	SISU (China)	2,5	Economics, Foreign Language, International Law	MAE China, double diploma	

10.2 / Funding joint international teams

Through the "International Program Fund," UCA^{JEDI} approved joint teams will be selected on the merits of their projects, and funded on a multi-year basis (initial three-year period). These teams will then aim at **setting up institutionalized** and identified **cooperation structures**, in the form of international laboratories implanted in partner universities or on UCA territory, in order to promote their outreach. The "International Program" Funds could be combined with the hosting of young international researchers ("Emerging Talents" Fund) or confirmed researchers ("Senior Tracks," etc.) In the matter of internationalizing training, the international consortia would become the **privileged framework** for developing topical mobility networks (incoming and outgoing) for Ph.D. students and other Graduate students. The main effect of this action is to export and import the best skills in research as well as training, with priority being given to international UCA networks.

In order to accompany the international rollout, the ESPER and D2EP programs will offer all of their teaching resources (including evaluations) in both English (attractiveness for incoming mobility and internationalization of non-English-speaking students) and in French (promoting the French language, and accompanying non-French speakers at the start of courses). The accompaniment for language acquisition will make use of IDEFI Innovalangues (UNS partnership, transferred to UCA).

In addition, a new service dedicated to International Scientific Visibility will be created within the UCA, helping to elevate the international scientific profile of the UCA by enhancing the level of English-language research publications by UCA members through editing services and training programs, as well as in the international communication and promotion of UCA research results through the development of an English-language public information service.

► Action 11: Support research transfer and partnerships

11.1 / Supporting Creativity and Entrepreneurship

The main goal of this action is to make UCA^{JEDI} an **experimental laboratory of collaborative resourcefulness** in the service of entrepreneurship and the common civic interest.

The organization offered by UCA^{JEDI}, focusing on the three Reference Centers, is intended to **simplify and increase levels of performance** of existing initiatives, and to drive new innovation and commercialization dynamics. In order to stimulate creativity via cross-fertilization of the involved players, UCA^{JEDI} events will be organized on a recurrent basis:

- diffusion and commercialization of scientific results from UCA^{JEDI} (conferences, moderated debates, presentations of results, and crowd and blog-sourcing);
- entrepreneurship and creative resourcefulness (an annual "Startup weekend" and hackathon, an annual "Jeunes Pousses" Challenge);
- diffusion of ideas and debate activities (1 BarCamp + 1 TEDx Cannes conference with UCA^{JEDI} member participation annually).

These actions, as a continuity of the CREATUDE project approved by the PEPITES (PIA) Program, will be hosted by "challenge campuses" that will be developed in the same locations as the centers of teaching innovation, the Fablabs, and Innovation Rooms. These venues will be open and accessible to UCA personnel and partners, as well as to students, encouraging cross-fertilization and innovation.

The venues will also be intended to host and develop the Job Forum Learning Sessions, which currently bring together around 100 corporations, with each Session being attended by more than 1000 students.

11.2 / European “Sauna startups”

UCA^{JEDI} also intends to develop a program on the European scale, destined to mature and develop start-ups, on the basis of the successful **“European Innovation Academy”** experiment. This experiment brings together, for 2-3 weeks, alternating between Sophia Antipolis and Nice, 500-600 students from 63 countries, who are initiating start-up projects, together with mentors from major universities and technoparks (Stanford, Cambridge, Technion, Munich, etc.) and international investors. The aim of UCA^{JEDI} will be to create the biggest “start-up sauna” in Europe, with 100 places reserved for students from UCA^{JEDI}. Côte d’Azur projects that succeed in obtaining funding will be hosted in one of the Côte d’Azur accelerators, and will enjoy privileged access to the open UCA^{JEDI} platforms.

11.3 / Developing structuring partnerships with the industrial world

UCA^{JEDI}, through its Partnership Program Management, is intended to become the single academic interlocutor of reference for the major industrial groups (Allianz, Orange, Régus Innovation, Amadeus, Thales Alenia Space, Intel, GDF Suez, Creazur, etc.). An active policy for the development of **industrial professorships** will be initiated, with the goal of creating one professorship every year.

These arrangements will be rounded out by a **dematerialized “dating” platform**, bringing together industrial requirements and available academic research skills, especially for small and medium-sized businesses. This innovation community “dating site” will be set up on the basis of work that has already begun with the Union Patronale 06, in order to identify supply and demand and to draw different communities together.

► Action 12: Create a UCA^{JEDI} Student status

(Student’s feeling of belonging to the UCA)

The ambition of the UCA IDEX in terms of student life is to **attract the best French and international students by offering them an exceptional quality of life** within the UCA. The idea is to give students the opportunity to make a course of study at the UCA an important experience along the path of their own personal and professional growth.

Several objectives will thus be pursued:

- **Make student engagement the trademark of UCA**, through a policy of required engagement for all UCA students, in programs involving tutoring, peer coaching, assistance for disabled students, and university promotion, that will be proposed by the student engagement center. Participation going beyond that required for all students can lead to a reduction in tuition fees.
- **Use local events and the exceptional environment of the Côte d’Azur** as a complement to in-class training and a means of personal development, through free access to major scientific, sports, cultural, and economic events taking place on the Côte d’Azur, for UCA students with related professional interests: **UCA Science Pass, UCA Sports Pass, UCA Culture Pass, UCA Business Pass**.
- **Create UCA Sports Clubs**, allowing UCA actors at all levels, from beginners to the elite (and including physically challenged), to come together, and to promote the participation of UCA teams in major sporting events and national and international competitions.
- **Promote student associative life** as a complement to in-class training, encouraging the creation of associations on the basis of shared affinities or interests, non-discipline specific and interesting to all campuses, relying strongly on social media. Hosting “talent” competitions (sports, cooking, art, etc.) will reinforce this feeling of belonging.

- **Create a UCA alumni association** as an international network, and promote the UCA brand (with specific actions concerning Doctoral students). Assist with the professional integration of UCA diploma holders with the creation of a **Career center**. Propose **special discounts** for access to UCA services and facilities, e.g. continuing education, room reservations, events organization. **Organize a major annual “UCA excellence” event for Alumni.**

To guarantee access to training for all students irrespective of their personal resources, excellence scholarships (UCA XS Awards) will be awarded to a certain number of highly promising, socially disadvantaged students. These scholarships will cover all teaching costs and accommodation, as well as the attribution of a yearly sum of 2000 euros for personal and traveling expenses. In addition, all students participating in UCA programs involving required mobility will receive 2000 euros for personal and traveling expenses.

UCA^{JEDI} will also make use of various wider spectrum actions carried out by the ComUE UCA:

- Bringing together all the local institutional players (CROUS, Communautés d'Agglomérations (conurbations), Monaco, and NCA Metropole) in favor of a common student life policy, and more ambitious coordinated projects for the creation of a student life territorial council.
- Setting up tools for professional insertion (Career Center, UCA forums, etc).
- Developing venues for exchange, sharing and collaboration (learning centers, the development of Faculty Clubs and UCA sporting infrastructure).
- Creating facilities for the support and development of student life (taking into consideration student volunteer commitment, Bonus Arts and Sports, etc). UCA^{JEDI} will capitalize on the collaborative outreach and education program MEDITES, oriented towards bringing scientific education to middle schools in underprivileged areas, with UCA^{JEDI} students participating in this project.
- Creating a UCA event-driven offer, mainly around sporting events (sporting challenges, commitment by UCA teams in major sporting events etc).

Finally, the UCA will create a university store, available online and in one or more physical locations, offering books, student supplies, and UCA-themed merchandise (clothing, stationery, etc).

3.2.3 Impact of the Initiative

a. In the area of Research

In the research domain, the structuring of the existing laboratories within the perimeter of excellence into academies, and the implementation of a governance structure organized along the lines of the academies, will guarantee the concentration of resources and the consolidation of the transdisciplinary actions already underway by member establishments (actions 2 and 6.1). This concentration of IDEX resources will ultimately allow a reorientation of a major part of the research activities of the site and recruitments by UCA or by its members, thereby consolidating the strategic priorities defined according to the international vision of the strategic committees. Through the creation of new groups (action 6.2) or the hosting of internationally renowned researchers (action 6.3), the Initiative will promote the emergence of laboratories shared between its members, including with its business and arts schools and private establishments. As an example, the dynamic created by the initiative has already led to the planned merger, in 2017, of the site's physics laboratories to create a single institute. Similarly, in the field of **economics and management**, groups from SKEMA, the UNS, and the CNRS are coming together in anticipation of the **creation of a single laboratory** as part of the 2018 contract.

Through its Reference Centers--structures at the public-private interface, conceived on the Anglo-saxon model of CRCs (Cooperative Research Centers) and co-funded by the Initiative, its members, and by private partners for both infrastructure and human resources--the Initiative aims to support training, innovation and research that will have strong economic impact for the region (actions 3, 4, 6.5 and 6.6) and promote and facilitate the creation of companies (action 11).

Action 6.4 will help reinforce a weak point in France with respect to the link between academic research and development, by specifically funding academic research with strong commercialization potential, accompanied in this goal by action 6.6.

b. In the area of University courses

The Initiative's research activities will all also have a strong influence on its training programs, as they will both rely on the same steering structures, namely the Academies and Centers. Ultimately, all of the graduate-level training programs will be carried out within the UCA and in relation to the needs of research, innovation, and the socioeconomic world. Selection of students for this graduate school can take place either directly following secondary studies, in undergraduate level programs "of excellence" accredited and run by the UCA or by its members (action 8.1), or after obtaining an undergraduate or graduate degree within the context of actions 7, 8.2, and 8.3. Student recruitment will be carried out by UCA at the national and international levels on the basis of candidates' pre-requisites, **academic record, motivation, UCA test score (GRE), as well as commitment** to the goals and activities of the UCA. To respond to the needs of post-baccalaureate students in the Côte d'Azur in terms of training and orientation, UCA members will each retain their current public missions, based on their own prerogatives and regulatory constraints, that have been legally entrusted to them. The UCA will also oversee the entire training offer with respect to continuing education and life-long education for the socio-economic world (action 9). All UCA training programs will ultimately be available through distance learning, including both degree-awarding and certification programs.

A survey of the training programs available within the site revealed the existence of certain overlapping programs as well as of gaps in the areas covered. In addition, the extensive relations that we have established with the socio-economic world have highlighted very specific needs that UCA training programs will address, in the appropriate form (CDC, CL and/or SC). In the context of the joint preparation of the Site contract, the organization and the clarity of our overall training offer, particularly in management and art, will be enhanced.

Concerning the attractiveness of the UCA to students, Tab. L gives information on some of the measures that the UCA intends to develop.

Tab. L - Attractiveness to students

Brief description of the attractiveness measure	Target headcount in 4 years	Origins of targeted students	Level concerned (L or M)
Admissions and Outreach Service	All international students	International students	L and M (and D)
Student engagement center (social, disability services, outreach, orientation, tutoring...) to promote social engagement of UCA students	100% of UCA	all	L and M (and D)
UCA Student Pass, gives free access to international events	100% of students enrolled in UCA	all	L and M (and D)
Summer schools: language and cultural studies (Nice-based for incoming students, abroad for outgoing students): 1 month	100% of students enrolled in UCA	International students in Nice and students abroad in partner universities	Following admission at Master's level, prior to the start of classes
Merit-based scholarships (tuition fees, stipend, and travel expenses)	20% of students enrolled in UCA	Socially disadvantaged students	L and M (and D)
UCA international student housing, in association with local authorities	All international students	International students	L and M (and D)

Tab. M shows examples of pedagogical innovation that will be rapidly implemented by the UCA.

Tab. M - Pedagogical innovation

Brief description of the attractiveness measure	Target headcount in 4 years	Level concerned (L, M or D)
Flipped classroom: replacement of classroom lectures by problem solving and online resources (MOOC and SPOC).	All students enrolled in UCA + 30% of L-level students and 50% of M-level students of UCA members	100% of L-level IDEX programs, 30% of L-level programs of UCA members, 100% of M-level UCA programs and 50% of M-level programs of UCA members
Immersive teaching: immersion in laboratory or company as an integral part of training	100% of ESPER and D2EP training (minimum 1500 students)	100% of L- and M-level flagship IDEX training programs
Distance learning with "virtual presence": teaching carried out in front of a local group of students, in an "immersive" classroom allowing other students to follow by videoconference	All dual-diploma programs with students sent abroad	L and M
Doctoral 2.0 training: doctoral training carried out online, shared between UCA and its foreign partner institutions.	1500	D

c. Procedures for implementing the actions

We have designed a decision-making process that will allow the self-organizing maintenance of excellence within the Initiative, through the development of new scientific and teaching projects. **The distribution of IDEX funds will fall under the responsibility of the IDEX President and his or her cabinet.** They will be advised by two international committees concerning the major strategic orientations.

First, the President and his or her Cabinet and the strategic committees will schedule the different calls for projects, to which the more mature projects coming from the Academies and Centers can apply.

After a review process carried out by the Think tanks, which will include both members of the Academic council and external industrial and academic experts, the President and his or her cabinet will select projects to be funded based on six criteria:

- Scientific quality;
- Commercialization potential;
- Transforming and structuring effect;
- Teaching innovation, obligatory mobility, multiple specializations (Major/Minor), flipped teaching approaches, peer coaching;
- Procedures for quality assurance; and
- International relevance.

The Initiative's projects will be rated by ad hoc Think tanks, created for each specific call for projects, that will be composed of nine individuals, three of them local and mostly coming from the Academic Council, and six internationally recognized **scientific personalities who are external to the site** and able to evaluate the calls for projects. The ratings (A, B, or C) will be validated by a vote by the Think tanks with a two-thirds majority.

All projects will include funds for research and/or teaching, as well as salaries and mobility grants for researchers and students. One year before the end of the funding, the projects will be evaluated, taking into account the commitments and goals that were defined at the beginning of the project.

At the end of the evaluation process, the committees will recommend to the President and his or her Cabinet one of three possibilities:

- to suspend the project;
- to extend the project for a defined period of time; or
- to permanently extend the project.

In this last case, this could involve the creation of, for example:

- a permanent research group within the UCA, involving the recruitment of new permanent staff;
- a permanent training offer within the UCA;
- public-private partnerships, at the national or international level; or
- new startups involving our researchers.

The President and his or her cabinet will validate any necessary complementary funding, and the UCA, through its Executive board and Academic Council, will incorporate these new activities at the institutional level if appropriate.

This global and unified governance (UCA and UCA^{JEDI}) has been designed to allow this transformational effect, and the participation of the Academic Council in the Think tanks from the beginning of the process will facilitate, later on, the creation of permanent positions and the incorporation of the project into already existing research laboratories and curricula.

The scientific and territorial committees will help the President and his or her cabinet follow the road map and the structuring actions of the Initiative. Each year, the two strategic committees will meet jointly to evaluate the trajectory of the Initiative and formulate recommendations for the UCA President.

The lines of research developed in the Academies, including the transdisciplinary themes, are currently being coordinated either by the Labexes or through the common policy developed with the National Research Organization (EPST) over the last three years. This coordination will ensure the development of projects that are sufficiently mature to be presented to the strategic committees from the earliest stages of the Initiative (for example, the common UNS-CNRS-SKEMA research center, or a joint laboratory with Amadeus). The equipment destined for the Reference centers will be identified in partnership with partner companies, in line with our investment strategies. Part of the co-funding will also be acquired within the framework of the "Scientific Equipment" program of the Region-State contract (CPER), which was signed in the summer of 2015.

UCA members are currently working together to prepare the future content of training programs that will either be official UCA programs or included in the UCA training offer. National diplomas will be included in the accreditation contract of the establishment, which will guarantee the awarding of associated national diplomas by the UCA by 2018. All doctoral students within the site will be enrolled in the UCA as of the beginning of the 2016-2017 university year.

Tab. - "Who does What"

	Project leader	Academies, Centers	ad hoc Think Tank	Audit and evaluation committee		IDEX/UCA President	Academic Council	Executive Board
				Strategic Scientific Committee	Industrial and territorial strategic committee			
Strategy and trajectory of the IDEX		Presentation of desired orientation		Definition of the strategy and trajectory of the IDEX and the themes of the Calls for Projects (CfPs)		Guidance of the trajectory		Integrate the IDEX strategy in the target university strategy
Constitution of the Think Tanks						Depending on the CfPs, from an internal pool (Academic Council and experts) and an external pool		
Calls (research, R&D, training, innovation, international, student life)		Propose projects or Emerging talents CVs	Recommend winners of the CfPs (decision of the IDEX President and Cabinet)	Define the Calls for Projects			Evaluate the coherence and relevance of new training programs for national diplomas	
Ph.D. positions within selected projects	Call and selection					Recruitment		
Postdoctoral positions within selected projects	Call and selection					Recruitment		
Emerging Talents		Prepare the Calls for candidates	Evaluate	Define the thematic framework		Recruitment	Selection	
Emerging talents ---> Integration			Evaluate	Validate the integration		Recruitment if open-ended contract	Recommend the placement of new teams within the UCA Recruitment if civil servant	Integrate the new team within the UCA Creation of civil service positions
High scientific and technical potential, temporary		Provide CVs	Evaluate			Recruitment (Fixed-term contract)	Selection for sabbatical	
High scientific and technical potential, permanent		Provide CVs	Evaluate	Validate the recruitment		Recruitment if open-ended contract	Recruitment if civil servant position	Creation of civil servant positions
Support personnel	Call and selection					Validation and Recruitment		
Administrative and technical personnel						Validation and Recruitment		

Call for proposals - IDEX/I-SITE
SELECTION PHASE
Amended project

Project acronym
UCA JEDI

3.6. MAIN COMMITMENTS

UCA members and their partners, through the UCA^{JEDI} project, commit to implementing:

- a common identity that translates into a **common signature** and unified communication of all UCA publications, research and training;
- common governance through the UCA Executive Board, using a posteriori controls, to encourage initiative and reactivity;
- the five Academies of Excellence, set up with the contributions of each of the players in the project;
- the Center of Modeling, Simulation and Interactions, to be the core of a methodological renewal of disciplines on the site;
- the three Reference centers, constructed in collaboration with local authorities and companies, to provide an effective connection and interactivity between fundamental research and innovation;
- the Virtual Center of Pedagogical Innovation, to promote the development and implementation of new and innovative teaching approaches and resources;
- the pooling of personnel from the various members of the UCA to assure the various UCA organizational and structural processes;
- exclusive use of IDEX funds and partners' contributions for UCA^{JEDI} activities under the unique responsibility of the UCA^{JEDI} President and his or her cabinet;
- joint actions concerning training, using the best potential of public and private sector establishments in the Academies, leading to the implementation of UCA Graduate Schools;
- a joint international policy, with the implementation of privileged networks targeting i) academic excellence, ii) rapidly growing, innovative countries, and iii) countries with a particular interest in interactions with French-speaking countries, and the setting up of international UCA^{JEDI} Campuses;
- a shared development strategy with territorial partners (local authorities, industrial interest, innovation support groups) materialized by creating new companies and jobs with high added value;
- development of student adhesion by making students major players in their training and UCA outreach;
- high-performance innovative tools for diffusing a scientific and technical culture, and changing how the territory and its population perceives higher education and research.